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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,807	08/15/2001	Daniel Price	SUN1P746/P6332	3576

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EXAMINER	
TANG, KUO LIANG J	

ART UNIT	PAPER NUMBER
2122	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/930,807	PRICE ET AL.	
	Examiner	Art Unit	
	Kuo-Liang J Tang	2122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/101/2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the amendment filed on 11/01/2004.

The priority date for this application is 8/15/2001.

Claims 1-24 are pending and have been examined.

Response to Arguments

2. Applicant's arguments with respect to claims 1-24 have been considered but they are not persuasive.

Claims 1, 4, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz, "Linux Kernel: Problem with interfaces and ioctl" in view of Weinstein, "Zombie process" (Art of record).

Claims 2-3, 5-6, 8-11, 13, 15-16, 18-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz, in view of Weinstein, and further in view of Faulkner et al., US patent No. 6,002,870 (Art of record, hereinafter Faulkner).

Claims 7, 12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz, in view of Weinstein, further in view of Faulkner, and further in view of Eaton, "Re: zombie "ls"".

In the remarks, the applicant argues that:

As for independent claims 1, 14 and 17, the Applicants primarily argue that Weinstein only describes "just executing a command (or often just hitting a carriage return to force the next prompt) is sufficient to cause the shell to execute the wait call" or

"killing the parent." However, neither executing a command nor killing the parent are "modifying the parent process to collect exit information" (see RE page 5).

Examiner's response:

The examiner disagrees with Applicants' assertion that Weinstein only describes "just executing a command (or often just hitting a carriage return to force the next prompt) is sufficient to cause the shell to execute the wait call" or "killing the parent." In fact, the examiner interprets Applicants' "modifying the parent process to collect exit information" to mean "getting the parent to execute the wait system call which will return the exit status of the child process to the parent process". The interpretation has to be construed in the context of the technique of killing defunct child processes by Unix described in the section "Reaping Zombies". Contrarily to Applicants' argument, the examiner does not equate "executing a command or just hitting a carriage return" to "modifying the parrent process to collect exit information". Rather, the examiner considers that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the parent process to collect exit information by getting the parent to execute the wait system call which will return the exit status of the child process to the parent process. Or, if the parent process is hung, then modify the parent process to collect exit information by re-assigning all children processes to process 1 (init.init process) which will collect exit information.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz, "Linux Kernel: Problem with interfaces and ioctl", Aug 01 2001 in view of Weinstein, "Zombie process" (Art of record).

As Per Claim 1, Cruz discloses having problems bringing down interfaces and "identifying a parent process associated with a defunct child process (E.g. see page 1, lines 17, 19 and 21, where the PIDs of defunct child process are (7729, 7732 and 8747) and the associated parent PID is 3278, and you can tell the process is in zombie state by the 'Z' in the column STAT)". Cruz doesn't explicitly disclose modifying the parent process associated with the defunct child process, wherein modifying the parent process allows the parent process to collect exit information associated with the defunct child process. However, Weinstein in an analogous art teaches "modifying the parent process associated with the defunct child process, wherein modifying the parent process allows the parent process to collect exit information associated with the defunct child process" (see page 2, lines 35-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to get rid of zombies, as suggested by

Weinstein, to Cruz. The modification would have been obvious because one of ordinary skill in the art would have been motivated to save the finite process table slots by deleting the dead (defunct/zombie) process.

As Per claim 4, the rejection of claim 1 is incorporated and further the combination of Cruz and Weinstein teaches:

"wherein modifying the parent process comprises altering the parent process to invoke wait( ) ..." (Again, see as noted above of Claim 1).

As Per Claim 14, is the computer program product claim corresponding to the method claim 1 and is rejected under the same reason set forth in connection of the rejection of claim 1.

As Per Claim 17, is the apparatus claim corresponding to the method claim 1 and is rejected under the same reason set forth in connection of the rejection of claim 1.

5. Claims 2-3, 5-6, 8-11, 13, 15-16, 18-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz, in view of Weinstein, and further in view of Faulkner et al., US patent No. 6,002,870 (Art of record, hereinafter Faulkner).

As Per Claim 2, the rejection of claim 1 is incorporated and further the combination of Cruz and Weinstein doesn't explicitly disclose co-opting a thread.

However, Faulkner in an analogous art teaches "wherein modifying the parent process comprises co-opting a thread associated with the parent process to receive exit information associated with the defunct child process" (E.g. see col. 1:26-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to co-opt a thread, as suggested by Faulkner, to the system of Cruz and Weinstein. The modification would have been obvious because one of ordinary skill in the art would have been motivated to use the debugging application tool without inadvertently change the state of the target programmed-process to examine, modify, monitor, and control the execution of the target programmed-process being debugged.

As Per Claim 3, the rejection of claim 1 is incorporated and further the combination of Cruz and Weinstein doesn't explicitly disclose creating an agent thread. However, Faulkner in an analogous art teaches "wherein modifying the parent process comprises creating an agent thread inside the parent process to collect exit information associated with the defunct process" (E.g. see col. 7:42-49 and Fig. 3, procedure 305 and associated text). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to create an agent thread, as suggested by Faulkner, to the system of Cruz and Weinstein. The modification would have been obvious because one of ordinary skill in the art would have been motivated to solve a problem that occurs when the LWP is stopped during execution of the operating system service and a portion of the operating system service has been completed.

As Per Claim 5, the rejection of claim 1 is incorporated and further the combination of Cruz and Weinstein doesn't explicitly disclose a control criterion. However, Faulkner in an analogous art teaches "wherein a control criterion is used to determine whether to modify the parent process" (E.g. see Fig. 4A, procedures 403, 409 and Fig. 4B, procedure 453, and associated text). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine whether to modify the parent process, as suggested by Faulkner, to the system of Cruz and Weinstein. The modification would have been obvious because one of ordinary skill in the art would have been motivated to use checks decision procedures to determine whether to initialize agent LWP and to modify the programmed-process or not.

As Per Claim 6, the rejection of claim 5 is incorporated and further the combination of Cruz, Weinstein and Faulkner teaches:

"wherein the control criterion comprises determining whether the parent process is stopped." (Again, as noted above of Claim 5, see Fig. 4B, procedure 453, and associated text).

As Per Claim 8, the rejection of claim 6 is incorporated and further Cruz teaches:

"wherein the control criterion comprises determining that the parent process is not an initial process." (E.g. see page 1, lines 17, 19 and 21, the associated parent PID is 3278).

As Per Claim 9, Cruz discloses having problems bringing down interfaces and "identifying a parent process associated with a defunct child process (E.g. see page 1, lines 17, 19 and 21, where the PIDs of defunct child process are (7729, 7732 and 8747) and the associated parent PID is 3278, and you can tell the process is in zombie state by the 'Z' in the column STAT)". Cruz doesn't explicitly disclose modifying the parent process associated with the defunct child process, wherein modifying the parent process allows the parent process to allow modification of the parent process, wherein the parent process is modified to reap the defunct child process. However, Weinstein in an analogous art teaches "to allow modification of the parent process, wherein the parent process is modified to reap the defunct child process" (see page 2, lines 35-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to get rid of zombies, as suggested by Weinstein, to Cruz. The modification would have been obvious because one of ordinary skill in the art would have been motivated to save the finite process table slots by deleting the dead (defunct/zombie) process.

The combination of Cruz and Weinstein doesn't explicitly disclose creating an agent thread. However, Faulkner in an analogous art teaches "attaching an agent thread to a parent process to allow modification of the parent process, wherein the parent process is modified to reap the defunct child process" (E.g. see col. 7:42-49 and Fig. 3, procedure 305 and associated text). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to create an agent thread, as suggested by Faulkner, to the system of Cruz and Weinstein. The modification would

have been obvious because one of ordinary skill in the art would have been motivated to solve a problem that occurs when the LWP is stopped during execution of the operating system service and a portion of the operating system service has been completed.

As per Claims 10-11, the rejection of claim 9 are incorporated and are rejected under the same reason set forth in connection of the rejection of claims 5-6 respectfully.

As per Claim 13, the rejection of claim 10 is incorporated and is rejected under the same reason set forth in connection of the rejection of claim 8.

As per Claims 15-16, the rejection of claim 14 are incorporated and are rejected under the same reason set forth in connection of the rejection of claims 2-3 respectfully.

As per Claims 18-19, the rejection of claim 17 are incorporated and are rejected under the same reason set forth in connection of the rejection of claims 2-3 respectfully.

As Per Claim 20, is the apparatus claim corresponding to the method claim 1 and is rejected under the same reason set forth in connection of the rejection of claim 9.

As per Claims 21-22 and 24, the rejection of claim 20 are incorporated and are rejected under the same reason set forth in connection of the rejection of claims 10-11 and 13 respectfully.

6. Claims 7, 12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz, in view of Weinstein, further in view of Faulkner, and further in view of Eaton, "Re: zombie "ls"", 1 Dec 1996.

As Per Claim 7, the rejection of claim 6 is incorporated and further the combination of Cruz, Weinstein and Faulkner doesn't explicitly disclose determining whether the defunct process is a newly defunct process. However, Eaton in an analogous art teaches "wherein the control criterion comprises determining whether the defunct process is a newly defunct process, wherein the parent is modified only if it is determined that the defunct process is not a newly defunct process (E.g. see page 1, lines 13-20, which states "... execute the octave command "ls" I get a new zombie process ...")". Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine a newly defunct process, as suggested by Eaton, to the system of Cruz, Weinstein and Faulkner. The modification would have been obvious because one of ordinary skill in the art would have been motivated to modify the parent process only when the defunct is new to save the finite process table slots.

As per Claim 12, the rejection of claim 10 is incorporated and is rejected under the same reason set forth in connection of the rejection of claim 7.

As per Claim 23, the rejection of claim 21 is incorporated and is rejected under the same reason set forth in connection of the rejection of claim 7.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang J Tang whose telephone number is (571) 272-3705. The examiner can normally be reached on 8:30AM - 7:00PM (Monday – Thursday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kuo-Liang J. Tang

Software Engineer Patent Examiner

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SUPERVISORY PATENT EXAMINER